STAT

PROGRAM INDOCTRINATION TRAINING MANUAL

November 27th, 1961

USAF review(s) completed.

STAT

INTRODUCTION:

This training session has been established to familiarize you with the program oxygen equipment, both personal and ships systems.

A total of six days will be used for this training course. Two days will be spent in classroom indoctrination: the remaining time will be spent in the altitude chamber simulating various flight conditions.

A detailed agenda is listed in Section 4.

The 'Classroom Indoctrination' will be used to give you a better understanding of the equipment you will be using.

The 'Altitude Chamber Runs' will give you actual experience and establish your confidence in the system as you are exposed to simulated flight conditions.

To help reassure you, the equipment, the suit the chamber and your crew have been through this exercise many times before: SUCCESSFULLY, I might add.

will be the Training Coordinator and serves as your Crew Chief during the chamber runs.

TABLE OF CONTENTS

- 1. PURPOSE
- 2. SYSTEM DESCRIPTION
- 3. TEST FACILITY
- 4. TRAINING AGENDA
- 5. DATA RECORDING
 - 5.1 Medical Data (Physical)
 - 5.2 Medical Data (During Test)
 - 5.3 Suit Checkout (Back pressure vs. flow)
 - 5.4 Oxygen Consumption Ship System
 Oxygen Consumption Emergency O2 System
- 6. GRAPHS
 - 6.1 Heat Cycle Graph Number 1

1. PURPOSE:

To provide the user with preliminary training and background information on the environmental system.

2. SYSTEM DESCRIPTION:

The environmental control system consists basically of a full pressure suit for altitude and high temperature protection, in addition to the oxygen systems, both ship and emergency.

3. TEST FACILITIES:

3.1 Equipment:

- 3.1.1 Altitude Chamber with Heat Chamber mocked up to simulate shipboard oxygen system
- 3.1.2 Bio-Medical Checkout Equipment
- 3.1.3 Emergency Oxygen System
- 3.1.4 Assorted flow and pressure measuring instruments

SECTION L PROGRAM TRAINING AGENDA

11-28-61

First Da	ay:	STAT
A.M.	Indoctrination:	
9 to 11	l. System Familiarization:	
	1.1 Ship System 1.2 Suit System 1.3 Ground Support Equipment	 STAT
	2. Test Equipment Familiarization	
	2.1 Chamber	
	2.2 Instrumentation	
	2.2.1 Altitude 2.2.2 Oxygen Consumption 2.2.3 Vent Supply 2.2.4 Temperature Recording 2.2.5 Medical Instrumentation	
	2.2.5.1 Rectal Probe 2.2.5.2 EKG Patches 2.2.5.3 Body Temperature Pickups	.
	2.3.1 Normal 2.3.2 Emergency	
P.M. 1 to 4:30	Two-Hour Run with Full Pressure Suit: Suit checkout	
7.0	l. One-half hour at 27,000 feet	
	2. One-half hour at 35,000 feet	
	3. One-half hour at 27,000 feet	
	Check back pressure vs. ventilation on suit at ground level, 27,000 feet and 35,000 feet.	
	Subject will use 'Press-to-test' at both alti- tudes for familiarization and comfort.	

Program Training Agenda

Page 2

Second Day:

A.M./P.M. 7 - 5:30 Eight and One-half Hour Run (Full Oxygen Ship System)
Full time at 27,000 feet with heat per attach-

STAT

Third Day:

P.M. 1 - 4:30 Indoctrination:

ed Graph Number 1.

l. Review of Second Day Run:

Briefing on high altitude/high temperature test to be performed on fourth day.

(i.e., flight profile, use of emergency oxygen system)

Fourth Day: High Altitude/High Temperature: 8:30 am Full ship system oj Bottles charged to 1:30 pm

- One-half hour at 27,000 feet. (Heat/Graph Number 1)
- One-quarter hour at maximum altitude (Heat as on Graph Number 1) Vent off.
- One-half hour at 27,000 feet (Heat/Graph 3. Number 1)
- Rapid ascent to 55,000 feet. Hold for one 40 quarter hour. (Maximum heat all over box wall - 500°F) Vent off.
- 5. Descent at 10,000 feet per minute to 27,000 feet. Hold for one-quarter hour. (All heat off) Vent on. Cooler on.
- 6. At 27,000 feet send in Emergency Oxygen Systemo (All heat OFF)
- 7. Rapid ascent to 60,000 feet. (All Heat OFF) Ship Oxygen Supply OFF. (Emergency Oxygen ON)
- 8. When Emergency Oxygen gages show 300 PSI (highest system) start descent to ground level. (All heat OFF) (Ship Oxygen Supply OFF) Emergency Oxygen ON

Program Training Agenda

Page 4

STAT

Fifth Day:

A.M./P.M. 8 - 4:30 Indoctrination Training:

Detail functions of system.

Briefing on run to be made on Sixth Day.

Sixth Day:

A.M./P.M. 7 to 5

Eight and One-half Hour Run:

1. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 1) Full Ship Oxygen System, except Chamber air temperature will be held to 100°F.

2. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 1) Chamber temperature will be held to 100°F. One-half Ship Oxygen System.

Program Training Agenda

Page 5

BASIC PROCEDURES:

- 1. Subject will pre-breath pure oxygen for ONE HOUR prior to the chamber run.
- 2. During test, subject will read out ship system gages every ten minutes for the first hour every fifteen minutes thereafter. Emergency oxygen gages, when this system is used, will be read every five minutes.
- 3. Standard rate of ascent and descent will be 10,000 feet per minute.
- 4. No in-flight feeding is planned unless requested by the subject.

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BACK PRESSURE VS FLOW DATA SHEET

Full Pressure Suit No. S-901	
Subject	
Test Conductor	Date

GROUND LEVEL BENCH TEST using 'Vol-O-Flow' meter. Suit only without subject, helmet and gloves OFF.

FLOW RATE (L.P.M)	BACK PRESSURE VENT AIR, SUIT (" H2O)
190	
280	
350	

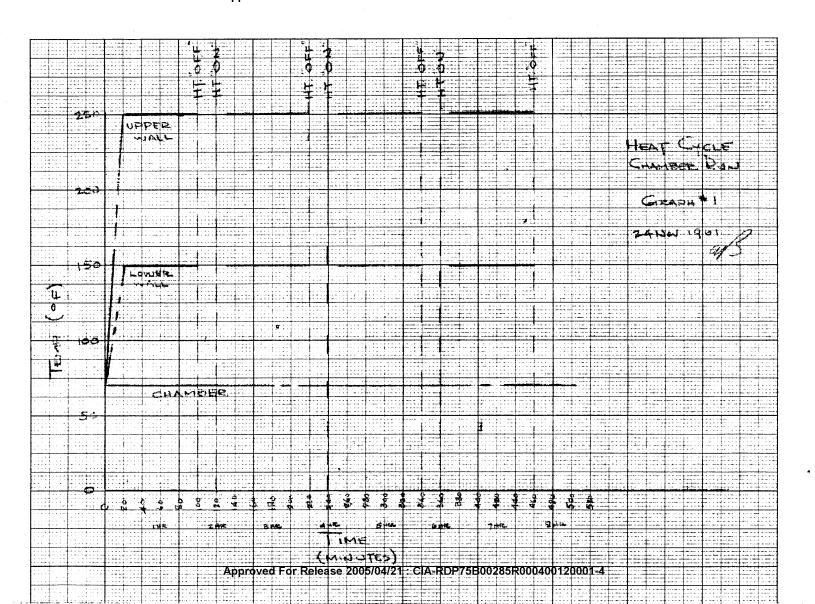
GROUND LEVEL - Subject fully suited: Visor closed.

FLOW RATE (L.P.M)	BACK PRESSURE VENT AIR, SUIT (" H20)		
	Standing	Sitting	
190			
280			
350			

ALTITUDE CHAMBER TESTS - Subject fully suited, visor closed.

FLOW RATE	BACK PRESSURE,	VENT AIR, SUIT	
(L.P.M)	Ground Level	27,000 Feet	35,000 Feet
	Sitting Flight Only Hookup	Flight Hookup	Flight Hookup
190			
280			
350			

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PROGRAM TRAINING AGENDA - One Subject

FIRST DAY

INDOCTRINATION

1. System Familiarization

Ship System Suit System

2. Test Equipment Familiarization by

STAT

Chamber and Chamber Instrumentation

Altitude Oxygen Consumption Vent Supply Temperature Recording

Medical Instrumentation

Rectal Probe EKG Patches Body Temperature Pickups

Test Procedure

Normal Emergency

- 3. Suit Checkout (Bench Test)
- 4. Chamber Run
 - 4.1 Familiarization Flight
 One and one-half hours at 26,000 ft.
 - 4.2 During chamber runs, frequently subject is requested to use the press-to-test for familiarization and comfort. Check ventilation vs. back pressure on suit at ground level and 26,000 ft.
- 5. Briefing for nine and one-half hour run

SECOND DAY

- 1. Nine and One-Half Hour Run (Heat per Graph Number 2)
 - 1.1 One and one-half hours at 26,000 ft.
 - 1.2 One-half hour at 35,000 ft. Check back pressure of suit ventilation
 - 1.3 Two hours at 26,000 ft.
 - 1.4 Ascend to 70,000 ft. for familiarization with the pressurized suit.
 - 1.5 Two hours at 26,000 feet
 - 1.6 At 26,000 ft. subject will exercise, simulating cockpit-type movements. (30 minutes)
 - 1.7 Remainder of run at 26,000 ft.

THIRD DAY

1. <u>Indoctrination</u>:

G. S. E. Van Maintenance Van Transport Ventilator, Hand

Flight Mask -Recovery System Parachute Survival Kit

Helmet and Oxygen Mask Fit-up

2. Brief for high altitude and high temperature run of fourth day

FOURTH DAY

High Altitude and High Temperature

Three and One-Half Hour Run -

- 1. Full Ship System
 - 1.1 One hour at 26,000 ft. (Heat per Graph Number 2)
 - 1.2 One-quarter hour at maximum altitude (Heat Graph Number 2)
 - 1.3 One-half hour at 26,000 feet (Heat per Graph Number 2)
 - 1.4 Rapid ascent to 55,000 feet. Hold for 5 minutes after wall temperature reaches 400°F. (Maximum heat all over box wall 400°F.) Vent OFF.
 - 1.5 Descent at 10,000 feet per minute to 26,000 feet. (All heat off for rest of run) Vent ON.
 - 1.6 At 26,000 feet send in Emergency Oxygen System.
 - 1.7 Rapid ascent to 60,000 feet. Ship Oxygen Supply OFF. Emergency Oxygen ON. Vent ON.
 - 1.8 When Emergency Oxygen gages show 300 psi (Highest System) start descent to ground level.
- 2. Brief for eight and one-half hour run.

FIFTH DAY

- 1. Eight and One-Half Hour Run -
 - 1.1 Four and one-quarter hours at 26,000 ft. (Heat per Graph Number 2) Full Ship System
 - 1.2 Four and one-quarter hours at 26,000 feet (Heat per Graph Number 2) One-half Ship Oxygen System, using whichever system has depleted faster.
- 2. Summary of Indoctrination

First Day:

A.M. 8 to 10 Indoctrination - Outline

- System Familiarization 1.
 - 1.1 Ship System
 - 1.2 Suit System

STAT

Test Equipment Familiarization

- 2.1 Chamber
- 2.2 Instrumentation
- 2.2.1 Altitude
 - 2.2.2 Oxygen Consumption
 - 2.2.3 Vent Supply
 - Temperature Recording
 - 2.2.5 Medical Instrumentation
 - 2.2.5.1 Rectal Probe

 - 2.2.5.2 EKG Patches 2.2.5.3 Body Temperature Pickups
- 2.3 Test Procedure
 - Normal
 - 2.3.1 2.3.2 Emergency

A.M.

8 to 10

Suit Checkout (Bench Test)

Suit #1

Suit #2

P.M.

Subject #1 Two-Hour Run with Full Pressure Suit 11 to

1:30

Suit Checkout

A27,000

- 1. One-half hour at 27,000 feet 2. One-half hour at 35,000 feet 3. One-half hour at 27,000 feet

Check back pressure vs. ventilation on suit at ground level, 27,000 feet and 35,000 feet.

Subject will use "Press-to-test" at both altitudes for familiarization and comfort.

Subject #2 Observe- - Lunch

P.M.

Subject #2

2 to 4:30

Two Hour Run as Above

Subject #2

Lunch - Brief for eight-hour run

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Program Training Agenda

Page 2

Second Day:

A.M./P.M.8 - 5:30

Subject #1

Eight and One-half Hour Run (Full Oxygen System)

(Suit-up at 7:30 A.M.) 7:00 Am

Full time at 27,000 feet with heat per Graph #2

Subject #2 Indoctrination.

G. S. E. Van Maint Van Transport Ventilator, Hand

Flight Mask -Recovery System Parachute Survival Kit

Helmet and Oxygen Mask Fit-up - Brief for eight and one-half hour run

Third Day: A.M./P.M.8 - 5:30

Subject #2 (Same as Subject #1 on second day)

Subject #1 (Same as Subject #2 on second day)

Brief for High Altitude with High Temperature Run

Fourth Day:

A.M./P.M. 7 - 12:30

Subject #1

High Altitude/High Temperature:
Full ship system
Bottles charged to PSI.

Ore breathed Ihr.

- One-half hour at 27,000 feet. (Heat/Graph Number 2)
- 2. One-quarter hour at maximum altitude (Heat as on Graph Number 2) Vent off.
- 3. One-half hour at 27,000 feet (Heat/Graph Number 2)
- 4. Rapid ascent to 55,000 feet. Hold for one quarter hour. (Maximum heat all over box wall 500°F) Vent off.
- 5. Descent at 10,000 feet per minute to 27,000 feet. Hold for one-quarter hour. (All heat off) Vent on. Cooler on.
- 6. At 27,000 feet send in Emergency Oxygen System. (All heat OFF)
- 7. Rapid ascent to 60,000 feet. (All Heat OFF) Ship Oxygen Supply OFF. (Emergency Oxygen ON)
- 8. When Emergency Oxygen gages show 300 PSI (highest system) start descent to ground level. (All heat OFF) (Ship Oxygen Supply OFF) Emergency Oxygen ON

Subject #2 Brief for High Altitude/High Temperature Run

P.M. 1:30 -7:00

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Subject #2 High Altitude/High Temperature Run as Subject #1

Subject #1
Review of High Altitude/High Temperature Run
Brief on eight and one-half hour run

Fifth Day: A.M./P.M. 8 - 5:30

Subject #1 Eight and One-half Hour Run Suit-up at 7:30 A.M.

- 1. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 2) Full Ship Oxygen System, except Chamber air temperature will be held to 100°F.
- 2. Four and one-quarter hours at 27,000 feet (Heat per Graph Number 2) Chamber temperature will be held to 100°F. One-half Ship Oxygen System.

Subject #2
Summary of Indoctrination
Brief for eight and one-half hour run

Sixth Day: A.M./P.M. 8 - 5:30

Subject #2 Eight and One-half hour run Suit-up at 7:30 A.M.

Same as Subject #1 (Fifth Day)

Subject #1 Summary of Indoctrination SHOGRAM TRAINING AGENDA - The Subjects

WEESH DAY

MINDOCURINATION

1. System Familiarization

Ship System Swit System

2. Test Equipment Familiarization by

Chamber and Chamber Instrumentation

Altitude Oxygen Consumption Vent Supply Temperature Recording

Medical Instrumentation

Rectal Probe PKG Patches Body Temperature Pickups

Test Procedure

Mormal Emergency

3. Suit Checkout (Bench Test)

Suit #1 Suit #2

- 4 Chamber Run Subject #1
 - 4.1 Familiarization Flight
 One and one-half hours at 26,000 ft.
 - 4.2 During chamber runs, subject is requested to use the press-to-test at any time for familiarization and comfort. Check ventilation vs. back pressure on suit at ground level and 26,000 ft.

Subject #2 Observe - Lunch

5. Subject #2 One and one-half hour run as above

Subject #1

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SECOND DAY

- 1. Nine and One-Half Hour Run Subject #1
 - 1.1 One and one-half hours at 26,000 ft. (heat per graph number 2)
 - 1.2 One-half hour at 35,000 ft. Check back pressure of suit ventilation
 - 1.3 Two hours at 26,000 ft.
 - 1.4 Ascend to 70,000 ft. for familiarization with the pressurized suit.
 - 1.5 Two hours at 26,000 feet
 - 1.6 At 26,000 ft. subject will exercise, simulating cockpit-type movements. (30 minutes)
 - 1.7 Remainder of run at 26,000 ft.
- 2. Subject #2 Indoctrination:

G. S. E. Van Maint Van Transport Ventilator, Hand

Flight Mask -Recovery System Parachute Survival Kit

Helmet and Oxygen Mask Fit-up

3. Subject #2

Brief for nine and one-half hour run.

WHIRD DAY

1. Wine and One-Half Hour Run - Subject #2

Same as Subject #1 - Nine and one-half hour run on Second Day

2. Subject #1

Indoctrination

Same as Subject #2 - Indoctrination on Second Day

3. Subject #1

Delef for high altitude and high temperature run of Sourth day

FOURTH DAY

High Altitude and High Temperature - Subject #1

- 1. Three and One-Half Hour Run -
 - 1.1 One hour at 26,000 ft. (Neat per Graph Number 2)
 - 1.2 One-quarter hour at maximum altitude (Heat per Graph Number 2)
 - 1.3 One-half hour at 26,000 feet (Heat per Graph Number 2)
 - 1.4 Rapid ascent to 55,000 feet. Hold for 5 minutes after well temperature reaches 400°F (Maximum heat all over box wall 400°F) Vent OFF.
 - 1.5 Descent at 10,000 feet per minute to 26,000 feet. Hold for one-quarter hour. (All heat off for rest of run). Cooler ON.
 - 1.6 At 26,000 feet send in Emergency Oxygen System.
 - 1.7 Rapid ascent to 60,000 feet. Ship Oxygen Supply OFF. (Emergency Oxygen ON)
 - 1.8 When Emergency Oxygen gages show 300 psi (highest system) start descent to ground level.
- 2. Bubject #2

Brief for High Altitude and High Temperature Run

3. Subject #2

High Altitude/High Temperature Run - Same As Subject#1

4. Subject #1

Review of High Altitude/High Temperature Run Brief on eight and one-half hour run

FIFTH DAY

- 1. Fight and One-Half Hour Run Subject #1
 - 1.1 Four and one-quarter hours at 26,000 ft. (Heat per Graph Number 2) Full Ship System
 - 1.2 Four and one-quarter hours at 26,000 feet (Heat per Graph Number 2) One-half Ship Oxygen System, using which-ever system has depleted faster.
- 2. Subject #2

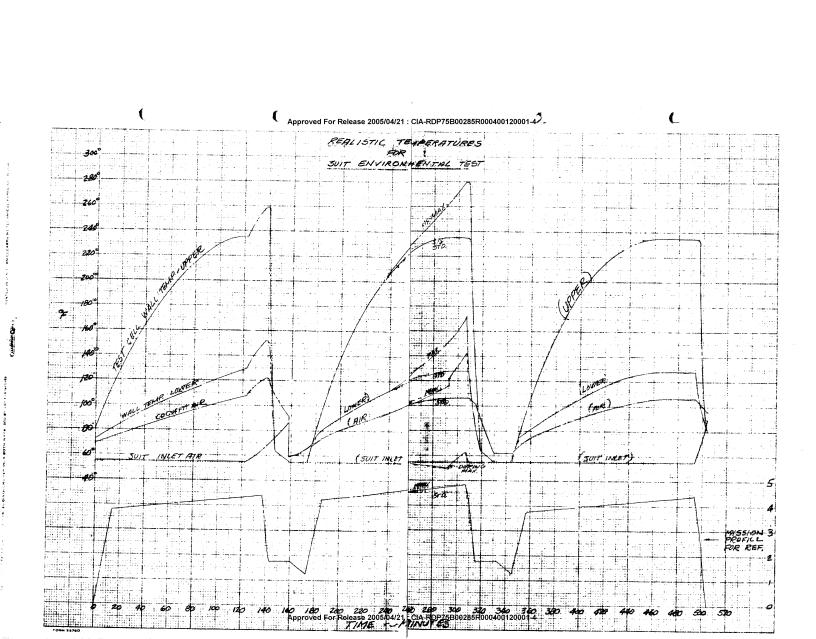
Brief on eight and one-half hour run.

SING DAY

Same as Subject #1 on Fifth Day

2. Subject #1
Summary of Indoctrination

3. Subject #2
Summary of Indectrination



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